

The Youth Risk Behavior Surveillance System: Policy and Program Applications – An Update

General Article

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Abstract

To monitor behaviors that place adolescents at increased risk for premature morbidity and mortality, the Centers for Disease Control and Prevention developed the Youth Risk Behavior Surveillance System (YRBSS). This system measures six categories of behaviors, including behaviors that contribute to violence and unintentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; unhealthy dietary behaviors; and inadequate physical activity. This article summarizes how some education and health agencies and non-governmental organizations, in collaboration with community agencies, school boards, parents, and youth, use YRBSS data to describe risk behaviors, create awareness, supplement staff development, set and monitor program goals, develop health education programs, support health-related legislation, and seek funding. Ways in which YRBSS data are distributed electronically also are summarized.

In 1989, the Centers for Disease Control and Prevention (CDC) developed the Youth Risk Behavior Surveillance System (YRBSS) to monitor behaviors that place adolescents most at risk for premature morbidity and mortality.¹ The YRBSS measures the following six categories of behaviors: behaviors that contribute to violence and unintentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; unhealthy dietary behaviors; and inadequate physical activity. The YRBSS has five components: 1) state and large city school-based surveys of 9th through 12th grade students; 2) national school-based surveys of 9th through 12th grade students; 3) a national household survey of 12- to 21-year-old youth; 4) a national mail-survey of college students in two- and four-year institutions; and 5) special population surveys.

The state and local school-based Youth Risk Behavior Surveys (YRBS) are conducted by interested education and health agencies as part of cooperative agreement activities with the CDC. These surveys were first conducted in 1990 and have been conducted biennially since 1991. The number of sites that participated in the YRBS increased from 24 states and 8 large cities in 1990 to 42 states, 4 territories, and 16 large cities in 1999. In 1999, 37 sites (23 states, 1 territory, and 13 cities) had weighted data that could be generalized to the entire high school population in each site's jurisdiction.

On request, the CDC provides both fiscal and technical assistance to interested education and health agencies who choose to conduct a YRBS. The technical assistance addresses survey planning, clearance, sampling, survey administration, data analysis, and uses of data. The CDC provides education and health agencies with advice based on survey research science and best practices from actual experience in the field. As more education and health agencies participate

in the YRBSS, the CDC increasingly is asked to assist with the application and use of results. In addition to questions about interpretation of data and analysis of trends over time, education and health agencies often ask how other state and federal agencies use YRBS data to improve policies or programs for youth. To respond to these questions, in 1995, CDC staff compiled a summary of how some agencies were using their YRBS data.² This article provides an update on the diverse uses of YRBS data.

In Spring 2000, the authors of this article spoke to 27 state agencies, 13 local agencies, and 5 non-governmental organizations (NGOs) funded by the CDC to identify how they used YRBS data. The five NGOs were the Association of State and Territorial Health Officials, the Council of Chief State School Officers, the National Association of State Boards of Education, the National School Boards Association, and the Society of State Directors of Health, Physical Education and Recreation. Although not all state and local agencies who conducted a YRBS were contacted, it is likely the activities of the agencies presented here represent the kinds of activities conducted by other agencies with YRBS data. Each agency or NGO representative provided many examples of interesting and innovative ways in which they used YRBS data. A number of examples that illustrated the diversity of uses of YRBS data were selected for this article. Interested readers can contact any agency or organization directly for more detailed information about the policies, programs, initiatives, and other activities described. This information might encourage new and innovative uses of YRBS data by agencies and NGOs.

USES OF YRBS DATA

Education and health agencies and NGOs, in collaboration with community agencies, school boards, parents, and youth, use YRBS data to help describe risk behaviors, create

awareness, supplement staff development, set and monitor program goals, develop health education programs, support health-related legislation, and seek funding. In addition, the increased use of the Internet and the availability of CD-ROMs have created a new outlet for distribution of YRBS data.

Describe Risk Behaviors

YRBS data make an important contribution to the public health literature by describing both the prevalence of priority health risk behaviors among youth and the correlates of those behaviors. YRBS data are included in CDC documents; reports and documents from other agencies and organizations, including Surgeon General Reports; and journal articles. The CDC releases national, state, and local YRBS results in *Morbidity and Mortality Weekly Report (MMWR) Surveillance Summaries*.³⁻⁶ These surveillance summaries provide an overview of available data for each survey cycle. Subsequent *MMWR* articles provide more detailed analyses about specific health behaviors. YRBS data also are found in documents such as *Health, United States, 2000-- With Adolescent Health Chartbook*,⁷ published by the CDC; *KIDS COUNT Special Report on When Teens Have Sex: Issues and Trends*,⁸ published by the Annie E. Casey Foundation; and *Trends in the Well-Being of America's Children & Youth: 1999*,⁹ published by the US Department of Health and Human Services. YRBS data have been used in four Surgeon General reports including *Reducing Tobacco Use: A Report of the Surgeon General*,¹⁰ *Physical Activity and Health: A Report of the Surgeon General*,¹¹ *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*,¹² and *Tobacco Use Among U.S. Racial/Ethnic Minority Groups: A Report of the Surgeon General*.¹³ Finally, numerous peer-reviewed journal articles present YRBS data generally¹⁴ or examine specific topics such as violence,^{15,16} suicide,¹⁷ unintentional injury risk behavior,¹⁸ cigarette smoking,^{19,20} alcohol or other drug use,²¹ sexual

risk behaviors,^{22,23} risk behaviors among students who have same-sex sexual partners,²⁴ and dietary behaviors.^{25,26}

An important use of YRBS data has been to describe health risk behaviors so that states and large cities can pinpoint key areas of concern. Massachusetts added questions to the YRBS to define risk behaviors among subgroups of students such as sexual abuse victims, immigrant youth, and youth who engage in same-sex sexual behavior. Hawaii YRBS data are used to differentiate risk behaviors between native Hawaiian and non-Hawaiian high school students. Vermont used their YRBS data on same-sex sexual behavior to demonstrate the association between this behavior and health risk behaviors. North Carolina used YRBS data to describe how risk behaviors are inversely associated with academic achievement. Boston developed profiles of high-risk student groups using YRBS data on various topics, such as sexual activity at a young age and sexual identity.

Create Awareness

Creating awareness of adolescent risk behaviors often leads to changes in school health policies and programs. Many state agencies distributed YRBS data to school principals, parents, and community organizations in a variety of formats, including fact sheets, newsletters, and press releases, to help create awareness of the level of risk among students. Delaware published a guidance manual, “First State for Health Literacy,” which describes the six risk behavior categories and cites results from the Delaware YRBS. Colorado has published periodic reports using YRBS data on the status of adolescent health titled “Adolescent Health in Colorado.” New York prepared a booklet on New York youth titled, “In Their Own Words,” which includes selected YRBS data summaries. Hawaii’s Department of Education developed a textbook in association with a professor at the University of Hawaii. The textbook, which includes YRBS

data to demonstrate the prevalence of health risk behaviors, is used in a course for future educators. Wyoming created a report of YRBS trend data for the state covering the years 1991-1999, which is available to parents, educators, and administrators. Mississippi used the HIV prevention curriculum “Becoming A Responsible Teen,” which includes YRBS data to present information about health risk behaviors to students throughout the state.

Local YRBS data also have been effective in creating awareness in the community. San Francisco published “Perspective on the State of San Francisco Children’s Health” and “A Snapshot of Adolescent Health in San Francisco.” Both documents used YRBS data as the primary information source. Chicago created fact sheets for each risk behavior using YRBS data, which were distributed at parent and teacher workshops and to their HIV Prevention Community Planning Group. Boston presented YRBS data to the Comprehensive Health Unified Advisory Council and its parent subcommittee to inform them of priority health risk behaviors among students. San Diego used YRBS data to create awareness of suicide as a problem among students in that jurisdiction. The data was shared with the health department, schools, and the community, which resulted in additional funding to provide after-school activities throughout the County of San Diego. The *Miami Herald* published an article examining trends over time in health risk behaviors among high school students in Fort Lauderdale using YRBS data as the primary source.

Each of the five of the NGOs contacted used YRBS data to create awareness through published newsletters, policy guides, and social marketing materials that are distributed to their members. The Association of State and Territorial Health Officials also distributed briefs on YRBS data to state health departments and at presentations for both members and non-members.

Supplement Staff Development

YRBS data frequently are used in staff development programs for teachers and school administrators. Connecticut used YRBS data on HIV risk behaviors in teacher-training programs. The Massachusetts Governor's Commission on Safe Schools for Gay and Lesbian Students used YRBS data in their training for school faculty, school administrators, and students. Arkansas used YRBS data in staff development programs for HIV prevention curricula "Get Real About AIDS" and "Reducing the Risk." New Hampshire's summer institutes for teachers integrated YRBS data into the curriculum. Maine used YRBS data in a staff development program focusing on HIV prevention for teachers and agency staff who serve youth. In Louisiana, Southeastern Louisiana University used YRBS data to identify topics for pre-service training of teachers and administrators. In Michigan, the trainers who prepare teachers to implement the Michigan Model for Comprehensive School Health Education modules incorporate the most recent YRBS data into their workshops.

Local agencies also have incorporated YRBS data into their training programs. In Washington, DC, a teacher-training program titled "What Every Teacher Needs to Know If Someone in School Has AIDS," was implemented as a result of YRBS data on HIV-related risk behaviors. Miami used YRBS data in a two-day training for teachers that encouraged participants to teach HIV prevention in their classrooms. When new YRBS data become available, Boston offers optional staff development programs to present an overview of the YRBS, explain why it is important, compare Boston results to Massachusetts results, report trends, and outline various profiles of risk behaviors. New Orleans schools conduct staff development programs every three years for HIV prevention education that include YRBS data.

Non-governmental organizations also have used national YRBS data for training and

staff development. The National Association of State Boards of Education used YRBS data in the school health policy guide “Fit, Healthy, and Ready to Learn.” The National School Boards Association incorporated YRBS data into workshops for its district school board members.

Set and Monitor Program Goals

Another important use of YRBS data is to help set and monitor program goals. YRBS data are used to monitor the extent to which the nation is achieving 16 *Healthy People 2010*²⁷ objectives and 3 of the 10 Leading Health Indicators. In addition, many states set and monitor program goals using YRBS data. The Missouri Department of Health’s Adolescent Health Task Force developed objectives for the six health risk behavior categories measured in the YRBS and used the results from the YRBS as indicators of success. Vermont used YRBS data to develop state-wide 2010 health objectives. Colorado is using YRBS data for state performance indicators as part of a state plan for a new legislatively created Division of Prevention and Intervention Services for Children and Youth. Wyoming will use YRBS data to assess effective implementation of health education standards in grades 7 to 12. Maine used HIV-related questions to set program goals, specifically for delaying the onset of sexual intercourse and increased condom use.

San Francisco used YRBS data to help determine how many hours of study would be devoted to certain topics in the classroom. In the Dallas Independent School District, because of YRBS results, all principals were directed to develop strategies to reduce health risk behaviors among students. This District does not consider any school to have an overall “effective campus” if such strategies are not in place. San Diego and Washington, DC have used YRBS data to set Year 2010 health objectives for their cities.

Develop Health Education Programs

Perhaps one of the most valuable uses of YRBS data is to provide useful information for school and community health educators to develop better health education programs. Utah supplemented the health education core curriculum with an eating disorder prevention program after reviewing YRBS data. Because of the success of that program, Utah is now developing a similar program for suicide prevention. Montana collects YRBS data from a variety of youth subgroups, including alternative school students. Montana's National Guard developed "Project Challenge," a residential program for at-risk youth, and incorporates an analysis between YRBS and alternative school YRBS data into their program planning. Wisconsin's local health departments are developing smoking cessation programs because YRBS results indicated many students had ever tried to quit smoking. Nevada developed a week-long leadership training camp called STATUS (Students Taking Action to Terminate Unlawful Substances) that integrated YRBS data into the curriculum. The camp trained students about peer education and health education.

When Houston middle school YRBS data revealed that some HIV-related risk behaviors start as early as nine years old, an HIV prevention curriculum was developed for grades K-5. In Philadelphia schools, all high school students must learn how to use graphing calculators, so teachers were encouraged to use YRBS data in teaching the students how to use their calculators. As a result of Fort Lauderdale YRBS data showing an increase in marijuana and other drug use, health education teachers in that district were encouraged to spend more time covering these topics in the classroom. New York City schools developed a program using YRBS data called "Safety Makes Sense" targeting unintentional injuries. Baltimore schools used YRBS data to develop the "Comprehensive Health Education Curriculum."

The Council of Chief State School Officers used national YRBS data to address issues surrounding the need for HIV education for those young people most at risk of HIV based on their behavior.

Support Health-Related Legislation

Several state agencies found that YRBS data helped support legislative changes regarding health education. Backed by YRBS data, Tennessee passed the Coordinated School Health Improvement Act of 1999. The Mississippi legislature's Health Education Committee on School Discipline used violence and injury data from the YRBS. Colorado's Comprehensive Health Education Act encouraged schools to provide comprehensive health education in a planned and sequential program of activities. Colorado YRBS data were used to justify the need for comprehensive health education. The Louisiana Governor's Task Force on School Discipline presented a report including YRBS data to the State Legislature. In Michigan, testimony that included 1999 YRBS data was given to a Select House Committee on Strategies to Reduce Teen Pregnancies.

Seek Funding

YRBS data also can be used to justify funding from federal, state, and private institutions. The Louisiana Office of Public Health's Adolescent Health Initiative used YRBS data in their proposal to the Council of Chief State School Officers and was subsequently funded for a staff development program on coordinated school health. The South Carolina government allocated ten million dollars for teen pregnancy prevention programs based on YRBS data. Hawaii used YRBS data to justify funding for the U.S. Department of Education Safe and Drug Free Schools Program.

The Washington, DC, Department of Health used YRBS data to help support opening a

school-based adolescent health clinic. In Fort Lauderdale, the Broward County Planning Partnership used YRBS data in seeking grant funding. The Boston Area Health Education Center, a program of the Boston Public Health Commission, received funds to produce the Boston Teen Health Report, which included YRBS data. In a joint project with Boston Public Schools, teachers developed interdisciplinary health education lessons based on the Boston Teen Health Report.

The Association of State and Territorial Health Officials, the National School Boards Association, and the Society of State Directors of Health, Physical Education, and Recreation all have used YRBS data in grant applications to the federal government.

Internet and Other Electronic Communication

The increased accessibility of the Internet has encouraged many state and local agencies to post YRBS data on their web sites. The CDC Division of Adolescent and School Health web site (<http://www.cdc.gov/nccdphp/dash>) has a page dedicated to the YRBSS that provides national, state, and local YRBS results (<http://www.cdc.gov/yrbss>). Vermont's web site (<http://www.state.vt.us/educ>) has a page dedicated to the YRBS, displaying the state's data, as well as an overview of the YRBS and uses of YRBS data. North Dakota's web site (<http://www.dpi.state.nd.us>) has executive summaries of YRBS results for that state. West Virginia's web site (<http://wvde.state.wv.us>) includes graphs for each YRBS question, which show results by total student population, gender, and grade. San Francisco's web site (<http://www.sfusd.k12.ca.us>) presents both their middle school and high school YRBS data. In addition, the Council of Chief State School Officers' web site (<http://www.ccsso.org/yrbs.html>) has links to many state YRBS reports.

Other forms of electronic communication have been used to distribute YRBS data. The

CDC developed three CD-ROMs titled *Youth95*,²⁸ *Youth97*,²⁹ and *Youth99*,³⁰ which allow the user to compare national, state, and local data; create trend graphs and tables; and view video on how state and local agencies are using the data (see YRBSS web site).

CONCLUSION

State and local agencies and NGOs have used YRBS data in many ways to improve health-related policies and programs for youth. State and local agencies have found YRBS results to be important in understanding health behaviors of adolescents in their jurisdiction, prioritizing health education and health promotion goals, supporting curricula or program modifications, supporting legislation that promotes health, and seeking funding for new initiatives. Many agencies, colleges, and universities are supplementing these efforts with web-based education and electronic transfer of YRBS data to users, such as program developers and students. As state and local agencies continue to conduct the YRBS, the opportunity to examine trends in priority health-risk behaviors should add substantially to their ability to use YRBS data to develop programs that promote healthy behaviors among youth.

References

1. Kann L, Kolbe LJ, Collins JL, eds. Measuring the health behavior of adolescents: The Youth Risk Behavior Surveillance System. *Public Health Rep.* 1993;108(suppl 1):1-67.
2. Everett SA, Kann L, McReynolds L. The Youth Risk Behavior Surveillance System: Policy and program applications. *J Sch Health.* 1997;67(8):333-335.
3. Kann L, Warren CW, Harris WA, Collins JL, Douglas KA, Collins ME, Williams BI, Ross JG, Kolbe LJ. Youth risk behavior surveillance – United States, 1993. *MMWR Morb Mortal Wkly Rep.* 1995;44(SS-1):1-56.
4. Kann L, Warren CW, Harris WA, Collins JL, Williams BI, Ross JG, Kolbe LJ. Youth risk behavior surveillance – United States, 1995. *MMWR Morb Mortal Wkly Rep.* 1996;45(SS-4):1-86.
5. Kann L, Kinchen SA, Williams BI, Ross JG, Lowry R, Hill CV, Grunbaum JA, Blumson PS, Collins JL, Kolbe LJ. Youth risk behavior surveillance – United States, 1997. *MMWR Morb Mortal Wkly Rep.* 1998;47(SS-3):1-92.
6. Kann L, Kinchen SA, Williams BI, Ross JG, Lowry R, Grunbaum JA, Kolbe LJ. Youth risk behavior surveillance – United States, 1999. *MMWR Morb Mortal Wkly Rep.* 2000;49(SS-5):1-96.

7. National Center for Health Statistics. *Health, United States, 2000 with Adolescent Health Chartbook*. Hyattsville, MD: National Center for Health Statistics; 2000.
8. The Annie E. Casey Foundation. *KIDS COUNT Special Report on When Teens Have Sex: Issues and Trends*. Baltimore, MD: Annie E. Casey Foundation; 1998.
9. US Dept of Health and Human Services. *Trends in the Well-Being of America's Children & Youth: 1999*. Washington, DC: US Dept of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation; 1999.
10. US Dept of Health and Human Services. *Reducing Tobacco Use: A Report of the Surgeon General*. Atlanta, GA: US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2000.
11. US Dept of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, GA: US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion; 1996.
12. US Dept of Health and Human Services. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*. Atlanta, GA: US Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease

Prevention and Health Promotion, Office on Smoking and Health; 1994.

13. US Dept of Health and Human Services. *Tobacco Use Among U.S. Racial/Ethnic Minority Groups – African Americans, American Indians and Alaska Natives, Asian Americans and Pacific Islanders, and Hispanics: A Report of the Surgeon General*. Atlanta, GA: US Dept of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 1998.

14. White D, Coleman M. Critical adolescent health issues: Results of the 1997 Wisconsin Youth Risk Behavior Survey. *Wis Med J*. 1998;97(8):23-24.

15. DuRant RH, Krowchuk DP, Kreiter S, Sinal SH, Woods CR. Weapon carrying on school property among middle school students. *Arch Pediatr Adolesc Med*. 1999;153:21-26.

16. Brener ND, Simon TR, Krug EG, Lowry R. Recent trends in violence-related behaviors among high school students in the United States. *JAMA*. 1999;282(5):440-446.

17. Woods ER, Lin YG, Middleman A, Beckford P, Chase L, DuRant RH. The associations of suicide attempts in adolescents. *Pediatrics*. 1997;99(6):791-796.

18. Everett SA, Shults RA, Barrios LC, Sacks JJ, Lowry R, Oeltmann J. Trends and subgroup differences in transportation-related injury risk and safety behaviors among high school students, 1991-1997. *J Adolesc Health*. 2001;28:228-234.

19. Gratiyas EJ, Krowchuk DP, Lawless MR, DuRant RH. Middle school students' sources of acquiring cigarettes and requests for proof of age. *J Adolesc Health*. 1999;25:276-283.

20. Miller N, Murayi T, Simoes EJ. Tobacco use among Missouri high school students. *Mo Med*. 1997;94(7):332-337.

21. Valois RF, Dunham AC, Jackson KL, Waller J. Association between employment and substance abuse behaviors among public high school adolescents. *J Adolesc Health*. 1999;25:256-263.

22. Shrier LA, Emans SJ, Woods ER, DuRant RH. The association of sexual risk behaviors and problem drug behaviors in high school students. *J Adolesc Health*. 1996;20:377-383.

23. Valois RF, Oeltmann JE, Waller J, Hussey JR. Relationship between number of sexual intercourse partners and selected health risk behaviors among public high school adolescents. *J Adolesc Health*. 1999;25:328-335.

24. Faulkner AH, Cranston K. Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students. *Am J Public Health*. 1998;88(2):262-266.

25. Field AE, Colditz GA, Fox MK, Byers R, Serdula M, Bosch RJ, Peterson KE. Comparison of 4 questionnaires for assessment of fruit and vegetable intake. *Am J Public Health*. 1998;88(8):1216-1218.

26. Krowchuk DP, Kreiter SR, Woods CR, Sinal SH, DuRant RH. Problem dieting behaviors among young adolescents. *Arch Pediatr Adolesc Med*. 1998;152:884-888.
27. US Dept of Health and Human Services. *Healthy People 2010 (Conference Edition, in Two Volumes)*. Washington, DC: US Dept of Health and Human Services; 2000.
28. US Dept of Health and Human Services. *Youth95: CD-ROM*. Atlanta, GA: US Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention; 1996.
29. US Dept of Health and Human Services. *Youth97: CD-ROM*. Atlanta, GA: US Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention; 1998.
30. US Dept of Health and Human Services. *Youth99: CD-ROM*. Atlanta, GA: US Dept of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention; 2000.